Chapter-4

Comparative Study of Suprasegmentals
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In the last two chapters, the main segments of both English and Gujarati phonological systems have been studied comparatively. It has been observed that the vowel system of English has a larger number of phonemes as well as variety of length and depth as compared to the Gujarati vowel system. On the other hand, the consonant system of Gujarati has a larger number of phonemes as compared to English. Again aspirated, non-aspirated consonants are a special category in Gujarati Phonology. These distinctions make the study essential and interesting. In the present chapter, ‘syllable’ and ‘stress’ elements of suprasegmentals of English and Gujarati will be studied comparatively. In phonology, suprasegmental is an equally imperative phonological portion and therefore it needs to be discussed in the thesis.

In this chapter, the word ‘stress’ is being used instead of the word ‘accent’ because it is widely found in the literature on stress and it creates the complexity of the description without contributing much to its value. Moreover, Peter Roach and many other writers do not agree with each other about the way the term should be used. One more reason is that the word ‘accent’ is used elsewhere to refer to different varieties of pronunciation (e.g. “a foreign accent”); it is confusing to use it for a quite different purpose – to a lesser extent we also have this problem with the word ‘stress’, which can be used to refer to psychological tension. In fact, Clark and Yallop have explained in detail about the confusing nature of the terms ‘stress’ and ‘accent’.¹
The elegance of English language lies in its utterance of stress-timed rhythm. T. Balasubramaniam describes stress thus; “In an English word of more than one syllable, one of the syllables is pronounced with greater prominence than the other(s). The syllable that is pronounced more prominently than the other(s) in the same word is said to be accented or to receive the accent.”

Peter Roach does not attempt to define ‘stress’ but he directly discusses the characteristics of stressed syllable. He approaches this matter in two various ways: (i) to consider what the speaker does in producing stressed syllable, (ii) to consider what characteristics of sound make a syllable stressed to a listener. It means ‘stress’ should be studied from the point of view of production and of perception; the two are obviously closely related, but are not identical.

Many experiments have been carried out on the perception of stress, and it is clear that many different sound characteristics are important in making a syllable recognizably stressed. Roach writes that from the perceptual point of view, all stressed syllables have one characteristic in common and that is prominence. He describes four factors important for stress syllable:

1. Most people seem to feel that stressed syllables are louder than unstressed; in other words, loudness is a component of prominence. In a sequence of identical syllables (e.g. ba:ba:ba:ba:), if one syllable is made louder than the others, it will be heard as stressed. However, it is important to realise that it is very difficult for a speaker to make a syllable
such as those explained below (ii-iv); if one literally changes only the loudness, the perceptual effect is not very strong.

II. The length of syllables has an important part to play in prominence. If one of the syllables in our “nonsense word” ba:ba:ba:ba: is made longer than the others, there is quite a strong tendency for that syllable to be heard as stressed.

III. Every voiced syllable is said on some pitch; pitch in speech is closely related to the frequency of vibration of the vocal folds and to the musical notion of low – and high – pitched notes. It is essentially a perceptual characteristic of speech. If one syllable of our “nonsense word” is said with a pitch that is noticeably different from that of the others, this will have a strong tendency to produce the effect of prominence. For example, if all syllables are said with low pitch except for one (said with high pitch), then the high-pitched syllable will be heard as stressed and the others as unstressed. To place some movement of pitch (e.g. rising or falling) on a syllable is even more effective.

IV. A syllable will tend to be prominent if it contains a vowel that is different in quality from neighbouring vowels. If we change one of the vowels in our “nonsense word” (e.g. ba:ba:ba:ba:) the “odd” syllable / bi/ will tend to be heard as stressed. This effect is not very powerful nor very important, but there is one particular way in which it is relevant in English... We can look on stressed syllables as occurring against a “background” of these weak syllables, so that their prominence is increased by contrast with these background qualities.
Prominence, then, is produced by four main factors (i) loudness (ii) length (iii) pitch and (iv) quality. Generally these four factors work together in combination, although syllables may sometimes be made prominent by means of only one or two of them. Experimental work has shown that these factors are not equally important; the strongest effect is produced by pitch, and length is also a powerful factor. Loudness and quality have much less effect.

Stress pattern is a challenging task for every speaker and for a lexicographer also. It is honestly mentioned in the introduction of “English Pronouncing Dictionary” of Daniel Jones (15th edition), that stress patterns present one of the most difficult problems in a pronouncing dictionary. One reason for this is that many polysyllabic words have more than one possible stress pattern, and one must consider carefully which should be recommended. Secondly, the stress of many words gets changed in different contexts, and it is necessary to indicate how this happens. Thirdly, there is no straightforward way to decide on how many different levels of stress are recognizable.\(^5\)

4.1 Levels of ‘Stress’:

After discussing the distinction between stress and unstress, an important matter to deliberate is upon the levels of stress that can be recognized. Such a treatment would be a two level analysis of stress. The present discussion is on stress ‘within the word’. This means only words are focused in isolation, which is a somewhat artificial situation because, normally
a word is very rarely spoken in isolation except answering in ‘yes’, ‘no’, ‘please’, ‘sorry’ etc. However, looking at a word in isolation does help us to see stress-placement and stress-level more clearly than studying them in the context of continuous speech.

For instance, looking at the word ‘around’- /əˈraʊnd/, where the stress always falls clearly on the last syllable and the first syllable is weak (looking from the point of view of stress), the most important fact about the way this word is pronounced is that on the second syllable the pitch of the voice does not remain level, but usually falls from a higher to a lower pitch. The pitch movement is diagrammed as shown below, where the two parallel lines represent the speaker’s high and low pitch level.

_____________________
|               |
|__________________|

The prominence that results from this pitch movement, or tone, gives the strongest type of stress; this is called ‘primary stress’ that is marked with (•).  

One more type of stress is also observed that is weaker than primary stress but stronger than other syllables, as in (the first syllables of) the words ‘photographic’ - /ˈfəʊtəˌɡræfɪk/ ‘anthropology’ - /ˌænθrəˈpɒlədʒɪ/. The stress in these words is called ‘secondary stress’. It is sometimes represented in transcription with a low mark (,) so that the examples could be transcribed as ‘photographic’ /ˌfəʊtəˈɡræfɪk/ ‘anthropology’- /ˌænθrəˈpɒlədʒɪ/.
Peter Roach also notices a third level besides the above mentioned two levels of stress which is called ‘unstressed’. It is regarded as being the absence of any recognizable amount of prominence. These are the three levels that will be normally used for describing English stress. Roach also adds that unstressed syllables containing /æ, ɪ or ʊ or a syllabic constant will sound less prominent than an unstressed syllabic containing some other vowel.

Some phonologists also mention a fourth level, as ‘tertiary’ in some polysyllabic words, but its introduction seems to add an unnecessary degree of complexity. This is also supported by some phonologists.

4.2 Stress within the Word:

English is not one of those languages where word stress can be decided simply in relation to the syllable of the word, as can be done in French (where the last syllable is usually stressed), Polish (where the syllable before the last-the penultimate syllable – is usually stressed) or Zech (where the first syllable is usually stressed). It is accepted even by the experts that English word stress is so difficult to predict that it is best to treat stress placement as a property of the individual word to be learned when the word itself is learned. However, it must also be recognised that though it is highly complex in most cases, when English speakers come across an unfamiliar word, they can pronounce it with the correct stress.

In order to decide on stress placement, the following information is necessary to use. This is summarized by Peter Roach as follows.
i. Whether the word is morphologically simple, or whether it is complex as a result – either containing one or more affixes (that is prefixes or suffixes) or of being a compound word.

ii. What is the grammatical category of the word? (noun, verb, adjective, etc.)

iii. How many numbers of syllables are in a word?

iv. What is the phonological structure of those syllables?

It is possible to divide syllables into two basic categories: strong and weak. One component of a syllable is the rhyme, which contains the syllable ‘peak’ and ‘coda’. A strong syllable has a rhyme which either has a syllable peak which is a long vowel or diphthong, or a vowel followed by a coda. Weak syllables have a syllable peak which is a short vowel and no coda unless the syllable peak is the schwa vowel /ə/ or /ɨ/.

4.3 General Rules for Placing Stress in a Word:

English philologists have worked immensely to generalize the matter. They do state certain rules for placing stress in a word but these rules are not free of exceptions. Nevertheless, here only rules are mentioned in a general sense so that they can be compared with the Gujarati phonological system.

4.3.1 Two syllable words:

Looking first at verbs, the basic rule is that if the second syllable of the verb is a strong syllable, then that second syllable is stressed. For example,
‘apply’ - / əˈplaɪ /

‘assist’ - / əˈsɪst /

If the final syllable is weak, then the first syllable is stressed. For example,

‘enter’ - /ˈentə /

‘open’ - /ˈəʊpən /

A final syllable is also unstressed if it contains / əu /

‘follow’ - /ˈfoləu /

‘borrow’ - /ˈbərəu /

Simple adjectives having two syllables are stressed according to the same rule. For example,

‘lovely’ - /ˈlʌvli /

‘correct’ - /ˈkərɛkt /

As with most stress rules, there are exceptions; for example, ‘honest’ - /ˈɒnəst/ , ‘perfect ’- /ˈpɜːfɛkt/ all of which end with strong syllables but are stressed on the first syllable.

Nouns require a different rule; if the second syllable contains a short vowel, then the stress will usually come on the first syllable, otherwise it will be on the second syllable. For example:

‘estate’ - /ˈɛstət/ ‘money’ - /ˈmʌni/

‘balloon’ - /ˈbəʊluːn/ ‘larum’ - /ˈlærʊm/
Other two syllable words such as adverbs and prepositions seem to behave like verbs and adjectives.

4.3.2 Three syllable word:

Here the matter is more complicated. In verbs, if the final syllable is strong, then it will be stressed, for instance ‘entertain’ - / entәˈteɪn / or ‘resurrect’ - / rezәˈrekt /. If the last syllable is weak, then it will be unstressed, and stress will be placed on the penultimate syllable if that syllable is strong. Thus;

‘encounter’ -  / ɪŋˈkɔʊntә /  
‘determine’ -  / ˌdɪtә:min /  

If both the second and third syllable is weak, then the stress falls on the initial syllable:

e.g. ‘parody’ - /ˈpәrәdi /

Nouns require a slightly different rule. Here, if the final syllable is weak, or ends with / әu /, then it is unstressed, if the syllable preceding this final syllable is strong, then that middle syllable will be stressed. Thus:

‘synopsis’ -  / sɪˈnɒpsɪs /  
‘potato’ -  / pәˈteɪtәʊ /  

If the second and third syllables are both weak, then the first syllable is stressed.
Most of the above rules show stress tending to go on strong syllables. However, three-syllable simple nouns are different. Even if the final syllable is strong, the stress will usually be placed on the first syllable. The last syllable is usually quite prominent, so that in some cases it could be said to have secondary stress. For example,

‘intellect’ - /ˈɪntəlekt /
‘marigold’ - /ˈmærɪgəuld /

Adjectives seem to need the same rule, to produce stress patterns such as:

‘opportunity’ - /ˈɒprətjuːnɪti /
‘insolent’ - /ˈɪnsəlɛnt /

There is another approach to English stress rule which is radically different. This is based on ‘generative’ phonology - an analysis which was first presented in Chomsky and Halle (1968) and has been followed by a large number of works exploring the same field. The main characteristics of basic generative phonology summarised by Peter Roach as an old-fashioned view of speech communication would be that what the speaker intends to say is coded - or represented - as a string of phonemes just like a phonemic transcription, what a listener hears is also converted by the brain from sound waves into a similar string of phonemes. A generative phonology, however, would say that this phonemic representation is not accurate; the
representation in the brain of the speaker or listener is much more abstract and is often quite different from the ‘real’ sounds recognizable in the sound wave. You may hear the word ‘football’ pronounced as / fupbɔːl /, your brain recognizes the word as made up of ‘foot’ and ‘ball’ and interprets it phonologically as / futbɔːl /. You may hear / ø / in the first syllable of ‘photography’, in the second syllable of ‘photograph’ and in the third syllable of ‘photographer’, but the brain recognizes links between these / ø / vowels and / œu, ʌ and æ / respectively, and supplies the underlying vowels. In speaking, underlying segments may be realized as different sounds as the stress-pattern changes. These vowel changes are brought about by rules—not the sort of rules that one might teach to language learners, but more like the instructions one might build in to a machine or write into a computer programme. According to Chomsky and Halle, at the abstract phonological level, word do not possess stress; stress (of many different levels) is the result of the application of phonological rules, which are simple enough in theory but highly complex in practice.⁹

4.4 Stress in Complex Word:

As such, it is difficult to distinguish between ‘simple’ and ‘complex’ words but in order to elaborate this issue we would directly focus upon the two major types of complex words;

i) Words made from a basic word form (also called as ‘stem’), with the addition of an affix; and
ii) Compound words, which are made of two (or occasionally more) independent English words (e.g. ‘ice-cream’, ‘armchair’).

Affixes are of two sorts in English: Prefixes and Suffixes. Affixes have one of three possible effects on word stress. The affix itself receives the primary stress, for e.g.

<table>
<thead>
<tr>
<th>Word</th>
<th>Stress</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘semicircle’</td>
<td>/‘semis3:kl/</td>
</tr>
<tr>
<td>‘personality’</td>
<td>/pə:sn’ælætɪ/</td>
</tr>
</tbody>
</table>

i) The word is stressed just as if the affix were not there, e.g.

<table>
<thead>
<tr>
<th>Word</th>
<th>Stress</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘pleasant’</td>
<td>/ˈpleznt/</td>
</tr>
<tr>
<td>‘unpleasant’</td>
<td>/ʌnˈpleznt/</td>
</tr>
<tr>
<td>‘market’</td>
<td>/ˈmaːkɪt/</td>
</tr>
<tr>
<td>‘marketing’</td>
<td>/ˈmaːkɪtɪŋ/</td>
</tr>
</tbody>
</table>

ii) The stress remains on the stem, not the affix, but is shifted to a different syllable, e.g.

<table>
<thead>
<tr>
<th>Word</th>
<th>Stress</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘magnet’</td>
<td>/ˈmægnət/</td>
</tr>
<tr>
<td>‘magnetic’</td>
<td>/mæɡˈnetɪk/</td>
</tr>
</tbody>
</table>

There are many prefixes and suffixes that affect on the placement of stress and some of them do not affect on the placement of stress but it is generalised as above. Moreover these details are also available in every course book of Phonetics.

4.5 Stress in Compound Words:

A compound word is normally analyzed into any two words, both of which can exist independently as English Words. There is no clear dividing
line between two words: compounds and pairs of words simply happen to occur together quite frequently.

As far as stress is concerned, the question is quite simple. A few rules are specified; although these are not completely reliable. Words, which normally do not receive primary stress, have secondary stress, although for the sake of clarity this is not marked here. Perhaps the most familiar type of compound is the one which combines two nouns and which normally has the stress on the first element, as in:

<table>
<thead>
<tr>
<th>'typewriter'</th>
<th>/ˈtɪprətɪr/</th>
</tr>
</thead>
<tbody>
<tr>
<td>'car-ferry'</td>
<td>/ˈkɑːferi/</td>
</tr>
</tbody>
</table>

It is probably the most common way to assume that stress will normally fall in this way on the other compounds; however, a variety of compounds receive stress instead on the second element. For example, compounds with an adjectival first element and the – ‘ed’ morpheme at the end have this pattern, e.g. bad-‘tempered, half-‘timbered. Compounds in which the first element is a number in some forms also tend to have final stress: e.g. three-‘wheeler, second-‘class. Compounds functioning as adverbs are usually final-stressed: e.g. North-‘East, down-‘stream. Finally, compounds which function as verbs and have an adverbial first element take final stress; e.g. ill-‘treat, back-‘pedal.
4.6 Word Class Pairs:

There are several dozen pairs of two syllable words with identical spelling which differ from each other in stress placement, apparently according to word class (noun, verb, or adjective). All appear to consist of prefix + stem. It is treated as a separate type by Peter Roach and he gives them the following rule;

“If a pair of prefix-plus-stem words exist, both members of which are spelt identically, one of which is a verb and the other of which is either a noun or an adjective, then the stress is placed not on the second syllable of the verb but on the first syllable of the noun or adjective.”

Some common examples are given below;

<table>
<thead>
<tr>
<th>Word</th>
<th>Pronunciation (N)</th>
<th>Pronunciation (V)</th>
</tr>
</thead>
<tbody>
<tr>
<td>abstract’</td>
<td>/ˈæbstrækt / (A)</td>
<td>/æbˈstrækt / (V)</td>
</tr>
<tr>
<td>‘conduct’</td>
<td>/ˈkəndəkt / (N)</td>
<td>/kənˈdəkt / (V)</td>
</tr>
<tr>
<td>‘desert’</td>
<td>/ˈdezət / (N)</td>
<td>/dɪˈzɜːt / (V)</td>
</tr>
<tr>
<td>‘object’</td>
<td>/ˈɔbʤekt / (N)</td>
<td>/əbˈʤekt / (V)</td>
</tr>
<tr>
<td>‘subject’</td>
<td>/ˈsʌbʤekt / (N)</td>
<td>/ˈsæbʤekt / (V)</td>
</tr>
</tbody>
</table>

(V = verb, A = adjective, N = noun)
4.7 Weak Forms:

English has well known strong forms and weak forms of syllables. For example ‘that’ can be pronounced as /ðæt/ (Strong form) or /ðәt/ (weak form). There are approximately forty such words in English. They play an important role in understanding native English and therefore it is equally important to make the English understand a foreigner’s English.

Almost all the words which have both a strong and weak form belong to a category that may be called function words – words that do not have a dictionary meaning in the way that is normally expected – nouns, verbs, adjectives and adverbs. These function words are words such as auxiliary verbs, prepositions, conjunctions, etc., all of which are in certain circumstances pronounced in their strong forms but which are more frequently pronounced in their weak forms. In most cases they have weak forms that are quite common and therefore here only those rules are being mentioned where these function words are pronounced in their strong form.

I. For many weak form words, when they occur at the end of a sentence; for example, the word ‘of’ has the weak form /əv/ in the following sentence:

‘I’m fond of chips.’

However, when it comes at the end of the sentence, as in the following example, it has the strong form /ɒv/:

‘Chips are what I’m fond of.’
II. When a weak-form word is being contrasted with another word; for example:

‘The letter’s from him, not to him.

A similar case is what might be called a ‘co-ordinated use of prepositions;

‘I travel to and from London a lot.’

‘A work of and about literature.’

III. When a weak-form word is given stress for the purpose of emphasis; for example;

‘You must give me more money.’

IV. When a weak form word is being “cited” or “quoted” for example;

‘You should not put “and” at the end of a sentence.’

4.8 Stress in Gujarati:

“The matter of stress is not quite clear.”\textsuperscript{11} is stated as the very first line on Gujarati Phonology website linked with International Phonetics Association pages last modified on May 25, 2009. It appears that these suprasegmental features have not been studied with proper focus or perhaps the language itself contains varieties such as ‘fixed stress’ or ‘variable stress’. Michael Ashby and John Maidment mention about these varieties of stress thus:

“Some languages have fixed stress in the sense that most words in the language bear stress on the same syllable. Favoured places for stress in fixed stress languages are the first syllable of the word, the last syllable of the word and the penultimate syllable of the word”\textsuperscript{12}
They give examples of Welsh, Czech and Turkish languages as the fixed stress language. They also mention one more type of language of variable stress. They describe variable stress as:

“Many languages have variable stress (sometimes called free stress). This does not mean that a particular word sometimes has one stress pattern and sometimes a different one. It means that one cannot make a simple, general statement as to which syllable of all (or most) words will be stressed.”

Here, they give example of Catalan language and not of any Indian language. However, in a study J.D.O'Connor mentions ‘Hindi’ as one of the languages not having some length of a syllable to maintain rhythm:

“In many languages the rhythm-unit is the syllable; each syllable has the same length as every syllable and there are no constant changes of syllable length which occur in English word groups. Some such languages are French, Spanish, Hindi, Yoruba. Speakers of these languages and others in which all the syllables have the same length will find English rhythm rather difficult.”

This is not the case only with Hindi, but in most of the languages of India, this variation in stress placement has been observed. That is why R.K.Bansal and J.B.Harrison remark;

“The patterns of word accent in English are not well organised. In some cases, a pattern different from that in British RP, is used. For example, the feature of change in
accent according to the function of the word is not always found in Indian English.”

4.9 General Rules for Placing Stress in Gujarati Word:

Campbell remarks that stress in Gujarati is barely perceptible. However, Bharati Modi and P. J. Mistry have researched in this area and tried to set some general rules regarding stress placement.

Bharati Modi gives her observations to place stress as follows:

i. Every one-syllable word takes stress and the words spoken with particular meaning and specified intention do take stress.

ii. In a disyllabic word, if the second syllable is a weak one, then the first syllable takes the stress. But if the first syllable is having a schwa[ə] vowel, then the second syllable takes the stress, for example;

| ‘Kalo’  | /'kaːlo/ | black       |
| ‘Taro’  | /'taːro/ | a star      |
| ‘Ravi’  | /'ravi/  | a personal name |
| ‘mane’  | /'meːne/ | me          |

Here Mistry also adds that stress generally falls on the first syllable, except when it does not have the /a/ vowel and the second syllable does have the /a/ vowel.
Further, Modi says that even if the second syllable of the two-syllable word is not free, it becomes a strong syllable and then takes the stress, for example;

| /məˈnən/       | 'manan'       | to think deeply |
|/vaˈhan/       | 'vahan'       | vehicle        |

iii. In a three-syllables word, the second syllable takes stress if not open, and thus becomes a strong syllable and takes the stress, for example;

| 'manushy'       | /məˈnʊʃə/          | human being   |
| 'musalman'      | /muˈsæltmən/        | muslim        |

iv. In the words having more than three syllables, mostly the second syllable takes the stress, for example;

| 'dafan'      | /ˈdefən/ |       |
| 'dafanav'    | /ˈdefənəv/ |       |
| 'dafnavnar'  | /ˈdefənˌnər/ |       |
| 'dafanavnara' | /ˈdefənˌnərə/ |       |

In this way, stress shifts from the first to the second syllable. In a similar way, it is also noticed in one study that, “stress typically falls on the penultimate syllable of a word, however, if the penultimate vowel in a word with more than two syllables is schwa, stress falls on the preceding syllable.”

4.10 Comparative Study of Stress Patterns:

English language is naturally produced in a stress-rhythmic manner. Most of the native speakers speak in such a way. Rules govern language at a
later stage. Again, these rules are set after very keen observations. British R. P. has a thorough study of stress pattern with enough data.

On the other hand, Gujarati is spoken placing stress mostly on the first syllable. In fact, Gujarati does not have such a pattern of speaking in stressed-rhythmic pattern. Another serious matter is that, till now standardization has only worked up to a certain level in Gujarati. Of course, scholars like Modi, Mistry and Suthar have contributed convincingly in these directions. However, they are not satisfied. That is why; Babu Suthar does not use stress-patterns anywhere in his “Gujarati English Dictionary”. Other dictionaries of Gujarati have not mentioned stress until now.

Bharati Modi arrived at some conclusions after doing research on pitch. Even then, she humbly says that a detailed research with large samples should be taken. According to her, the observations were tentative, but stress is a coordinating phenomenon.

A common feature in stress patterns of both the systems is to place stress on the strong syllable of the word in most cases, irrespective whether it is on the first, second or third syllable. Another common rule is that a syllable having schwa /ə/ vowel does not take stress in almost all cases. Thirdly, affixes sometimes affect on the placement of stress. Primary and secondary stresses are also noted in both the systems.

Besides certain similarities, the differences (distinctions) are as follows:

In English, stress changes according to function. There are a number of disyllabic words in which the stress pattern depends on whether the word is
used as a noun, adjective, or a verb. The stress is on the first syllable when the word is a noun or an adjective and on the second syllable when it is a verb. This type of stress-shift according to the function of word is not found in Gujarati.

To conclude the study of stress-pattern, it can be said that though a thorough study has not been taken up in Gujarati Phonology, certain features can interestingly be compared with English stress-patterns. An effort is therefore made to discuss the ‘syllabic structure’ from various points of view.

4.11 Syllable:

The study of syllable structure has remained a subject of considerable interest to phonologists. Generally, people believe that, even if syllable is not defined, they can count how many syllables are there in a given word or a sentence. If they are asked to do this, they often tap their fingers as they count, which illustrates the importance of syllables in speech. A word is made up of one or more syllables. The unit that is next in hierarchy to the speech sound is the syllable.²⁰

Peter Roach describes that phonetically (that is in relation to the way we produce them and the way they sound) syllables are usually described as consisting of a centre which has little or no obstruction to airflow and which sounds comparatively loud; before and after this center (that is, at the beginning and end of syllable), there will be greater obstruction to airflow and/or less loud sound. Some examples are given below by Peter Roach:²¹
i. What we might call a minimum syllable would be a single vowel in isolation, e.g. the words ‘are’ / əː /, ‘or’ / ɔː /, ‘err’ / ɜːr /. These are preceded and followed by silence. Isolated sounds such as |m|, which we sometimes produce to indicate agreement, or |f| to ask for silence, must also be regarded as syllables.

ii. Some syllables have an onset:
   ‘bar’ - / bɑː /,
   ‘key’ - / kiː /
   ‘more’ - / mɔː /

iii. Syllables may have no onset but have a coda:
   ‘am’ - / æm /
   ‘ought’ - / ɔːt /
   ‘ease’ - / iːz /

iv. Some syllables have onset and coda:
   ‘run’ - / rʌn /
   ‘sat’ - / sæt /
   ‘fill’ - / f /

Recent work in phonology makes use of a rather more refined analysis of the syllable in which the vowel and the coda are known as the ‘rhyme’. In fact, both Daniel Jones’ English Pronouncing Dictionary (15th edition) and Peter Roach’s English Phonetics and Phonology adopt this term ‘rhyme’. Roach illustrates that if you think of rhyming English verse, you will see that this works by matching just that part of the last syllable of a line. The rhyme is divided into the ‘peak’ (normally the vowel) and the ‘coda’ (but note that this is
optional; the rhyme may have no coda, as in a word like ‘me’). As it has been seen, the syllable may also have an onset, but this is not obligatory. The structure is thus the following:22

![Syllable Diagram]

4.12 Structure of English syllable:

There are many ways of studying ‘syllable’. However studying them from the phonological point of view is quite different. What this involves is looking at the possible combinations of English phonemes; the study of the possible phoneme combinations of a language is called phonotactics.’ It is also discussed earlier (in chapter -3, topic- ‘consonant cluster’) that the word begins normally with a vowel, or with one, two or three consonants. No word begins with more than three consonants. In the same way, a word ends when it is the last word spoken before a pause; it can end with a vowel or with one, two, three or four consonants (in a small number of cases). No word ends with more than four consonants.

In short, the English syllable can be summarized as having the following maximum phonological structure:

![Syllable Structure Diagram]
It will be noticed that there must be a vowel in the center of the syllable. There is also a special case, that of ‘syllabic consonants’. For instance, let us analyze the word ‘students’ / stjuːdnts / as consisting of one syllable with a three consonant cluster / stj / for its onset and ending with a four consonant cluster / dnts / . The word contains two syllables, with the consonant / d / dividing them and the second syllable ending with the cluster / nts / ; in other words, the word is treated as though there was a vowel between / d / and / n /, although a vowel only occurs when pronounced in a slow and careful manner.

4.13 English Syllable-division:

There are many different ways of deciding how to divide syllables. One of the most widely accepted guidelines is what is known as the maximum onsets principle. It is mentioned in the English Pronouncing Dictionary of Daniel Jones. He says, “No completely satisfactory scheme of syllable division can be produced – all sets of rules will throw up some cases which cannot be dealt with properly.” The principles used in this dictionary are located below: 23

a) As far as possible, syllables should not be divided in a way that violates the English syllable structure. The ‘Maximum Onset Principle’ which is widely recognized in contemporary phonology, is followed as far as possible. This means that, wherever possible syllable(s) should be divided in such a way that as many consonants as possible are assigned to the beginning of the syllable to the right (if one thinks in terms of how they are written in transcription), rather than to the end of the syllable to
the left. However, when this would result in a syllable ending with a stressed /ɪ/, /e/, /æ/, /ʌ/, /ʊ/ or /u/, it is considered that this would constitute a violation of English phonotactics and the first (or only) intervocalic consonant is assigned to the preceding syllable; thus the word ‘better’ is divided /bet.ә/ whereas ‘beater’ is divided /bi:.tә/ (a dot (.) is used to divide syllables, in accordance with the current recommendations of the International Phonetic Association. However, this is not used where a stress mark occurs, as these are effectively also syllable division markers.). In case of unstressed short vowels /e/, /æ/, /ʌ/ and /ʊ/ are also prevented from appearing in syllable – final position; however, unstressed /ɪ/ and /u/ are allowed the same “privilege” of occurrence as /e/ when a consonant begins following a syllable and may therefore occur in final position in unstressed syllables except pre-pausally. Thus in a word such as ‘develop’, the syllable division is /dɪ'vel.ap/

b) Notwithstanding the above, words in compounds should not be re-divided syllabically in a way that does not agree with perceived word boundaries. For example ‘hardware’ could in theory be divided /ˈhaː.dweәr/ but most readers would find this counter – intuitive and would prefer /ˈhaː.d.weә/. This principle applies to open, closed and hyphenated compounds.
4.14 Gujarati Syllable Structure:

In Gujarati Phonology system, syllable is not studied thoroughly by phonologists. Most of them have given ‘exterior’ statements on syllabication and on syllable division, as it is also found in stress-pattern. It can be said that suprasegmental has not been studied with proper focus by Gujarati phonologists till now. However, previously Praboth Pandit had framed different consonant sequences. In recent times, Bharati Modi has set out some rules for syllabication as well as for syllable division. Babu Suthar and Cardona have also applied syllable division in Gujarati words in their Online Gujarati English Dictionary (Second Draft).

Gujarati is written in its own distinct ‘abugida’ script (i.e. a system where each consonant has an inherent vowel). Considering this basic speciality, Bharati Modi has given rules of syllable – division. They are as follows:

1. Every letter should be given the status of a syllable. For example,

\[
\begin{align*}
V & \quad o \quad d \quad p \quad d \quad r \quad a \\
\mid & \quad \mid & \quad \mid \\
S_1 & \quad S_2 & \quad S_3
\end{align*}
\]

‘vadodara’

(S = Syllable)

2. (a)

\[
\begin{align*}
C_1 \cdots C \ V & \rightarrow C_1 \cdots C + C \cdots C \ V \\
\mid & \quad i & \quad i+1 & \quad \mid \\
S & \quad n & \quad n
\end{align*}
\]
A word ‘Akkad’ (arrogant) is here selected that will be considered for syllable division according to above mentioned rules:

1) /әkәd/
   \[\begin{array}{c}
   S1 \\
   S2 \\
   \end{array}\]  (Rule-1)

2) /әкәd/
   \[\begin{array}{c}
   S1 \\
   S2 \\
   \end{array}\]  (Rule-2(a))

/әкәd/
   \[\begin{array}{c}
   S1 \\
   S2 \\
   \end{array}\]  (Rule-2(b))

Modi remarks here that there is a possibility of incorrect syllable–division according to the rule 2(b).

For Example,

‘manas’-(man) /mәs/
   \[\begin{array}{c}
   S1 \\
   S2 \\
   \end{array}\]  (Rule 2(a),(b))

Therefore, here she finds the requirement of one more rule, which is given as follows:
3) \[ [\text{syll} \] \ c \ c (\text{v - having stress}) \] (c) \[ [\text{syll} \] \ c \ c (\text{v - having stress}) \]

So now,

\[
/ \text{m a n e s} /
\]

Or

\[
/ \text{e k k e d} /
\]

Nevertheless, according to the Rule-3 / kk / the consonants occur at the medial position, which have to be put at the initial position of the second syllable. However, here one more controversy arises. If the medial consonants are not of accepted consonant clusters of Gujarati Phonology, then they should not be put at the initial position of the second syllable:

For example;

‗salagav‘- (to fire) \[
/s \ e \ g \ a \ v /
\]

According to this, syllable division / l\text{g} / is an unacceptable consonant cluster that is not suitable to Gujarati Phonology. No Gujarati speaker initiates syllable with a / l\text{g} / consonant cluster. That is why a condition is to be added to set the rule-3 comprehensibly.
Condition: $CC_2$ (consonant cluster) should not be an unacceptable one. It should not universally prohibit and should even be suitable to Gujarati Phonology.

After implementing the above condition, many consonant clusters will be excluded from the rule of syllable-division for example:

<table>
<thead>
<tr>
<th>‘vadaki’</th>
<th>Cup</th>
<th>/v a d k i/</th>
<th>/dk/</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘vamanu’</td>
<td>Lightless</td>
<td>/v a m u/</td>
<td>/m/</td>
</tr>
<tr>
<td>‘sukhdi’</td>
<td>type of sweet</td>
<td>/s u k d i/</td>
<td>/k/</td>
</tr>
</tbody>
</table>

Such kind of consonant clusters are a composition of morphological formation and morphological extension. However, these types of consonant clusters should not be considered as phonological clusters of Gujarati. They may only be treated as consonant sequence. Bharati Modi mentions Prabodh Pandit’s observation regarding framing new consonant clusters by approaching words like,

<table>
<thead>
<tr>
<th>‘ramato’</th>
<th>games</th>
<th>/r a m t o/</th>
<th>/mt/</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘bhamto’</td>
<td>a corrupt word for a Brahmin</td>
<td>/b a m t o/</td>
<td>/mt/</td>
</tr>
</tbody>
</table>

Nevertheless, according to Modi, such consonant clusters are not scientific and they should not be considered as ‘consonant clusters’ of the Gujarati phonological system. Moreover they are a part of the consonant sequence that occurred because of morphological formation and morphological extension. It seems such kind of consonant sequences should
be treated for syllable division according to the rule-3 only keeping in mind the condition mentioned above.

4.15 Comparison between English and Gujarati Syllabication and Syllable-division:

The fundamental concept of syllable is quite different in both the systems due to their orthography patterns. The alphabets of English language do not contain inherent vowel with consonant while the alphabets of Gujarati language contains an inherent vowel with a consonant. As it is mentioned earlier, Gujarati orthography is written in abugida script. Thus, English syllable is the unit that is next in hierarchy to the speech sound while in Gujarati every letter can have the status of a syllable.

English and Gujarati syllable-structure also have certain similarities and distinctions. As in both the systems, a syllable can consist up to three consonants but in Gujarati, only up to two consonants can end a syllable against up to four consonants in English. Thus, Gujarati canonical syllable structure is (c) (c) (c) v (c) (c).27

Another important feature is: consonant clusters do not occur medially in English phonology while in Gujarati, consonant clusters occur initially, medially and finally, and ‘Geminates’ occur only medially. Geminates were previously treated as long consonants, but they are now better analyzed as cluster of two identical segments. Two proofs for this is mentioned by Mistry in his work ‘Gujarati Phonology’.28
The /u/ in geminated ‘uccār’ (pronunciation) sounds more like the one in clustered ‘udgar’ (utterance) than the one in shortened ‘ucāţ’ (anxiety). Geminates behave towards (that is disallowed) [ə] – deletion like cluster do. He comments further, “Germination can serve as intensification. In some adjectives and adverbs, a singular consonant before the agreement vowel can be doubled for intensification - VCū → VCCū.”

<table>
<thead>
<tr>
<th></th>
<th>[mo[tũ]</th>
<th>[mo[tũ]]</th>
<th>big</th>
</tr>
</thead>
<tbody>
<tr>
<td>Straight</td>
<td>[sidhũ]</td>
<td>[sidhdhũ]</td>
<td>straight</td>
</tr>
<tr>
<td>considerably</td>
<td>[khasũ]</td>
<td>[khasũ]</td>
<td>considerably</td>
</tr>
</tbody>
</table>

In Gujarati, there are some consonant sequences, which are not accepted according to Gujarati phonology, that occur at medial position and create some complexity in syllable-division. In English, such unaccepted consonant sequences are not observed. Moreover medially, English does not produce consonant sequences. Thus, such complexity is not found in English syllable-division.

Thus, the study of syllable can be concluded with the remarks that to clear certain confusion and establish a sound syllable pattern - a thorough study with full data is required in Gujarati phonology. Hence, the present work tries to provide some light to compare the imperative features of syllable and syllable-division.
References:


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